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(21)Application number : 2000-266068 (71)Applicant : MATSUSHITA ELECTRIC IND
CO LTD

(22)Date of filing : 01.09.2000 (72)Inventor : SHODA YUKIE
KOZUKA MASAYUKI
TOKUDA KATSUMI
HIRATA NOBORU

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(54) METHOD FOR PROCESSING DATA WITH COPYRIGHT AND PROCESSOR FOR
THE DATA

(57)Abstract:

PROBLEM TO BE SOLVED: To improve an operability in a data processor by displaying a right for processing data with a copyright on a screen.

SOLUTION: An internal data storing part 15 stores distributed music data. A copyright management table 16 stores the processing right concerning each kind of music data. The processing right includes a reproduction right and a data copy right to an external storage medium 7etc. A control part 17 refers to the processing right which is stored in the table 16judges the propriety of execution with respect to an inputted processing instruction 30 and outputs a control signal 32 to a reproducing part 18etc. A display part 21 displays the processing right which is stored in the table 16 in accordance with an operation mode set in a mode storage part 20. The reproduction right and the copy right of music data are displayed by using an icon and information concerning the external storage medium 7 is displayed when the icon indicating the copy right under usage is selected. When the processing instruction 30

not executable is inputted an alarm screen is displayed.

CLAIMS

[Claim(s)]

[Claim 1] Data processing equipment which performs processing within the limits of a right acquired to data protected by copyright to be characterized by comprising the following.

A data accumulation means to store two or more data.

A right-information-data memory measure which memorizes a process right needed about data stored in said data accumulation means when processing.

An input means which inputs a processing instruction to data stored in said data accumulation means.

A control means which judges whether said processing instruction is executed based on said process right memorized by said right-information-data memory measure a processing performing means which executes said processing instruction according to control from said control means and a displaying means which displays on a screen said process right memorized by said right-information-data memory measure.

[Claim 2] The data processing equipment according to claim 1 which received from a channel data stored in said data accumulation means and was further provided with a data receiving means which acquires said process right memorized by said right-information-data memory measure using said channel.

[Claim 3] The data processing equipment according to claim 1 including a data copying means characterized by comprising the following.

A function in which said processing performing means copies data stored in said data accumulation means to a storage constituted removable according to control from said control means.

A function which eliminates data copied to said storage.

[Claim 4] The data processing equipment according to claim 3 which said right-information-data memory measure memorizes storage information which identifies said storage and is characterized by said displaying means displaying said storage information on a screen.

[Claim 5] The data processing equipment according to claim 4 when said displaying means is chosen [data copied to said storage] by said input means wherein it displays said storage information about the storage concerned on a screen.

[Claim 6] The data processing equipment according to claim 4 wherein said storage information is peculiar storage medium identifiers which said storage has.

[Claim 7] The data processing equipment according to claim 4 wherein said storage

information is the identifier assigned in order to identify said storage.

[Claim 8]The data processing equipment according to claim 3 which outputs an alarm signal when it judges that said control means does not execute said processing instruction which is a data copy command to said storageand is characterized by said displaying means displaying a warning screen based on said alarm signal.

[Claim 9]The data processing equipment according to claim 8wherein said displaying means performs a display to which acquisition of a process right needed when performing data copy processing on said warning screen is urged.

[Claim 10]The data processing equipment according to claim 3 which outputs an alarm signal when it judges that said control means does not execute said processing instruction which is a data erasure command from said storageand is characterized by said displaying means displaying a warning screen based on said alarm signal.

[Claim 11]The data processing equipment according to claim 1wherein said displaying means displays an icon corresponding to said process right memorized by said right-information-data memory measure on a screen.

[Claim 12]The data processing equipment according to claim 11 when said displaying means is added [restriction of execution frequency] to said process right memorized by said right-information-data memory measurewherein it displays an icon corresponding to the process right concerned on a screen only the number of the execution frequency concerned.

[Claim 13]The data processing equipment according to claim 1wherein said displaying means displays said process right about data which can be processed on a screen in the processing mode concerned according to a set-up processing mode.

[Claim 14]The data processing equipment according to claim 1 which said displaying means changes the method of presentation according to a set-up display modeand is characterized by displaying on a screen said process right memorized by said right-information-data memory measure.

[Claim 15]The data processing equipment according to claim 1 which outputs an alarm signal when it judges that said control means does not execute said processing instructionand is characterized by said displaying means displaying a warning screen based on said alarm signal.

[Claim 16]A data accumulation step which is a data processing method processed within the limits of an acquired right to data protected under copyrightand stores two or more dataA right-information-data memory step which memorizes a process right needed about each data stored at said data accumulation step when processingAn input step which inputs a processing instruction to data stored at said data accumulation stepA control step which judges whether said processing instruction is executed based on said process right memorized by said right-information-data memory stepA data processing method provided with a processing execution step which executes said processing instructionand a displaying step which displays on a screen said process right memorized by said right-information-data memory step

according to control from said control step.

[Claim 17] A data accumulation step which is the recording medium which recorded a program for performing a data processing method processed within the limits of an acquired right by computer to data protected under copyright and stores two or more data; A right-information-data memory step which memorizes a process right needed about each data stored at said data accumulation step when processing; An input step which inputs a processing instruction to data stored at said data accumulation step; A control step which judges whether said processing instruction is executed based on said process right memorized by said right-information-data memory step; A recording medium which recorded a program for performing a data processing method by computer provided with a processing execution step which executes said processing instruction and a displaying step which displays on a screen said process right memorized by said right-information-data memory step according to control from said control step.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the method and equipment which process more specifically the data with copyright distributed via the network about the method and equipment which process the data protected under copyright.

[0002]

[Description of the Prior Art] In recent years digitization of information progresses and a lot of digital works having contained multimedia contents such as a picture and a sound are circulating. A user is provided with such digital works using means of communications such as recording media such as CD-ROM and the Internet. Since especially the method of downloading digital works in a personal computer using a communication network is a simple method, the spread of future is predicted. Digital works can be reproduced easily and it has the feature that the characteristic does not deteriorate even if it reproduces. For this reason the demand to the copyright protection of digital works is very high.

[0003] The following conventional technologies are known about the copyright protection of digital works. The contents control system currently used in the music distribution system as the 1st conventional technology is known. It is published by "music distribution MATTANASHI" the Nikkei electronic the March 8 1999 item no. 738 and pp. 87-111 about the contents control system. In a contents control system the enciphered music data (henceforth the file A) and another file (henceforth the file B) having contained control information the decode key of the file A etc. are distributed using a communication network. When reproducing the music data

contained in the file A it is judged with reference to the control information on the file B whether reproduction and the duplicate of the file A are permitted.

[0004] Drawing 17 is a block diagram showing the composition of the data processing equipment which used the 1st conventional technology. The data processing equipment shown in drawing 17 is used connecting with a communication network (not shown). The distributes data accumulating part 101 stores the above-mentioned file A distributed using communication networkssuch as the Internet and CATV (Cable TV). The copyright management table 102 matches with the file A the above-mentioned file B distributed using the communication networkand stores it. By communicating with a fee collection server (not shown)the purchase processing part 103 purchases the process right needed when processing reproduction etc.and records the purchased process right on the copyright management table 102. The control section 105 judges whether a processing instruction is executed with reference to the process right recorded on the copyright management table 102when a processing instruction is inputted using the input part 104. The regenerating section 106 receives the decode key contained in the file B from the control section 105and reproduces the music data contained in the file A.

[0005]As the 2nd conventional technologythe method of enciphering digital data and preventing the duplicate of inaccurate data indicated by JPH9-320192A is known. Drawing 18 is a figure showing the composition of the copyright protection equipment concerning the 2nd conventional technology. The copyright protection equipment shown in drawing 18 is enciphered before putting the digital data read from the disk 111 on the bus 114. That is the data format part 112 adds the duplicate management information which shows the data read from the disk 111 whether encryption start informationan enciphering keythe unit of encryptionand the duplicate of data are permittedand the identification information of an encryption algorithm to be used. The encryption section 113 enciphers data using the encryption key provided from the key delivery part 110. Data flows on the bus 114 in the state where it was enciphered. The decoding section 115 decrypts data using the decode key provided from the key delivery part 110. It is restored to the same state as the time of being read from the disk 111 by the data format part 116and the decrypted data is played by the regenerating section 117 after that.

[0006]Thusaccording to the 1st conventional technologyit can process within the limits of the process right which purchased the received data with copyrightand according to the 2nd conventional technologydata with copyright can be protected from an unjust duplicate.

[0007]

[Problem to be solved by the invention]Howeverin such conventional technologies the process right needed when processing data with copyright was not shown by suitable expressive form to the user. For this reasonthere was a problem that the user could not recognize which processing can be performed to each data.

[0008] Soan object of this invention is to provide the data processing method with copyright and equipment which improved operativity by displaying the process right of data with copyright on a screen by suitable expressive form.

[0009]

[The means for solving a technical problem and an effect of the invention] A data accumulation means for the 1st invention to be data processing equipment which performs processing within the limits of the acquired right to the data protected under copyright and to store two or more data. The right-information-data memory measure which memorizes the process right needed about the data stored in the data accumulation means when processing. The input means which inputs the processing instruction to the data stored in the data accumulation means. Based on the process right memorized by the right-information-data memory measure, it has a control means which judges whether a processing instruction is executed. A processing performing means which executes a processing instruction according to the control from a control means and a displaying means which displays the process right memorized by the right-information-data memory measure on a screen.

[0010] According to such the 1st invention, a process right about each data stored in a data accumulation means is displayed on a screen. For this reason, the user can recognize easily what kind of processing can be performed to each data.

[0011] In the 1st invention, the 2nd invention receives from a channel data stored in a data accumulation means and is further provided with a data receiving means which acquires a process right memorized by right-information-data memory measure using a channel.

[0012] According to such the 2nd invention, data stored in a data accumulation means is received from a channel. For this reason, the user can recognize easily what kind of processing can be performed to each data received from a channel.

[0013] The 3rd invention includes a data copying means which has a function which copies data in which a processing performing means was accumulated in a data accumulation means according to control from a control means to a storage constituted removable and a function which eliminates data copied to a storage in the 1st invention.

[0014] According to such the 3rd invention, each data stored in a data accumulation means can be copied to external storage and copied data can be eliminated. In addition, a process right for performing each processing is displayed on a screen. For this reason, the user can recognize easily whether data copy processing to external storage or data erasure processing can be performed to each data.

[0015] The 4th invention memorizes storage information from which a right-information-data memory measure discriminates a storage in the 3rd invention and a displaying means displays storage information on a screen.

[0016] According to such the 4th invention, information about a storage which copied data is displayed on a screen. For this reason, the user can recognize easily to which

external storage data was copied.

[0017]In the 4th inventionthe 5th invention displays storage information about a storage on a screenwhen data in which a displaying means was copied to a storage is chosen by input means.

[0018]According to such the 5th inventionsince information about a storage which copied data is displayed when data is chosenmuch storage information is not simultaneously displayed on a screen. For this reasonthe user can recognize easily to which storage selected data was copied.

[0019]6th invention is characterized by storage information being peculiar storage medium identifiers which a storage has in the 4th invention.

[0020]According to such the 6th inventionthe user can recognize easily to which storage data was copied using peculiar storage medium identifiers which a storage has.

[0021]7th invention is characterized by storage information being the identifier assigned in order to identify a storage in the 4th invention.

[0022]According to such the 7th inventionthe user can assign an identifier for identifying a storage freelyand can recognize easily to which storage data was copied using this.

[0023]Outputting an alarm signalwhen it judges thatas for the 8th inventiona control means does not execute a processing instruction which is a data copy command to a storage in the 3rd inventiona displaying means displays a warning screen based on an alarm signal.

[0024]According to such the 8th inventiona warning screen is displayed when there is no process right for performing a data copy. For this reasonthe user can recognize easily that a data copy command was not executed.

[0025]In the 9th inventionin the 8th inventiona displaying means performs a display to which acquisition of a process right needed when performing data copy processing on a warning screen is urged.

[0026]According to such the 9th inventionthe user can acquire a right of a data copy from a warning screen in which it is shown that there is no process right for performing a data copy promptly.

[0027]Outputting an alarm signalwhen it judges that the 10th invention does not execute the processing instruction whose control means is the data erasure command from a storage in the 3rd inventiona displaying means displays a warning screen based on an alarm signal.

[0028]According to such the 10th inventiona warning screen is displayed when there is no process right for performing data erasure. For this reasonthe user can recognize easily that a data erasure command was not executed.

[0029]The 11th invention displays the icon corresponding to the process right the displaying means was remembered to be by the right-information-data memory measure on a screen in the 1st invention.

[0030]According to such the 11th inventionthe process right about each data is

displayed using an icon. For this reason the user can recognize the contents of the process right about each data easily.

[0031] In the 12th invention in the 11th invention when restriction of execution frequency is added to the process right memorized by the right-information-data memory means as a displaying means only the number of execution frequency displays the icon corresponding to a process right on a screen.

[0032] According to such the 12th invention an icon equal to execution frequency is displayed on a screen. For this reason the user can recognize easily restriction of the execution frequency added to the process right.

[0033] In a processing mode the 13th invention displays the process right about the data which can be processed on a screen in the 1st invention according to the processing mode to which the displaying means was set.

[0034] According to such the 13th invention the user can avoid inputting the processing instruction mistaken to the data which displays only the data which can be processed and cannot process it.

[0035] In the 1st invention a displaying means changes the method of presentation according to the set-up display mode and the 14th invention displays the process right memorized by the right-information-data memory measure on a screen.

[0036] According to such the 14th invention the user can change a display mode according to liking and can display the process right about each data on a screen.

[0037] Outputting an alarm signal when it judges that as for the 15th invention a control means does not execute a processing instruction in the 1st invention a displaying means displays a warning screen based on an alarm signal.

[0038] According to such the 15th invention a warning screen is displayed when there is no process right over data. For this reason the user can recognize easily that a processing instruction was not executed.

[0039] The 16th invention is provided with the following.

The data accumulation step which is a data processing method processed within the limits of the acquired right to the data protected under copyright and stores two or more data.

The right-information-data memory step which memorizes the process right needed about each data stored at the data accumulation step when processing.

The input step which inputs the processing instruction to the data stored at the data accumulation step.

The control step which judges whether a processing instruction is executed based on the process right memorized by the right-information-data memory step the processing execution step which executes a processing instruction according to the control from a control step and the displaying step which displays the process right memorized by the right-information-data memory step on a screen.

[0040] The 17th invention is provided with the following.

The data accumulation step which is the recording medium which recorded the program for performing the data processing method processed within the limits of the acquired right by computer to the data protected under copyright and stores two or more data.

The right-information-data memory step which memorizes the process right needed about each data stored at the data accumulation step when processing.

The input step which inputs the processing instruction to the data stored at the data accumulation step.

The control step which judges whether a processing instruction is executed based on the process right memorized by the right-information-data memory step the processing execution step which executes a processing instruction according to the control from a control step and the displaying step which displays the process right memorized by the right-information-data memory step on a screen.

[0041] According to such the 16th or 17th invention a process right about data stored at a data accumulation step is displayed on a screen. For this reason the user can recognize easily what kind of processing can be performed to each data.

[0042] Thus a data processing method with copyright concerning this invention and its equipment become what it is very much easy to use for a user and the practical effect is very large.

[0043]

[Mode for carrying out the invention] (A 1st embodiment) Drawing 1 is a block diagram showing composition of data processing equipment concerning a 1st embodiment of this invention. The data processing equipment 1 shown in drawing 1 It has the input part 10, the distributes data accumulating part 11, the purchase management table 12, the purchase processing part 13, the data conversion part 14, the in-house-data accumulating part 15, the copyright management table 16, the control section 17, the regenerating section 18, check-out/check-in treating part 19, the mode storing section 20, and the display 21. The data processing equipment 1 displays a process right about music data which is equipment which processes reproduction a duplicate etc. to distributed music data with copyright and was distributed on a screen.

[0044] Before explaining the details of the data processing equipment 1 with reference to drawing 2 and drawing 3, the music distribution system using the data processing equipment 1 and the format of the music data which the data processing equipment 1 treats are explained.

[0045] The data processing equipment 1 is connected to the distributing server 5 and the fee collection server 6 via the communication network 4 as shown in drawing 2. The communication networks 4 are networks such as the Internet, CATV, satellite communication, or a cellular phone. The distributing server 5 accumulates much music data protected under copyright and distributes music data according to the demand from the data processing equipment 1. The fee collection server 6 performs

accounting about the distributed music data. The external storage 7 is a storage constituted removable to the data processing equipment 1 and the portable music reproduction machine 8. The data processing equipment 1 identifies the external storage 7 using the peculiar storage medium identifiers which the external storage 7 has or the label name which the user specified every external storage 7.

[0046] The outline of copyright management over music data is as follows. The distributing server 5 distributes the enciphered music data and the decode key for decryption to the data processing equipment 1. The data processing equipment 1 transmits the information on the purport that it agrees for paying a music data distribution—front or the back to the fee collection server 6 and purchases the process right about the distributed music data. The data processing equipment 1 performs processing to the distributed music data within the limits of the purchased process right. For example only the number of times of the reproduction right which purchased the data processing equipment 1 reproduces music data using a decode key.

[0047] The data processing equipment 1 can perform processing (it is hereafter called check-out) which copies music data and a decode key to the external storage 7 and processing (it is hereafter called check-in) which eliminates the music data copied to the external storage 7. Only the number of times of the right of check-out which purchased the data processing equipment 1 can check out music data. The right of check-out is recovered when you check in at the checked-out music data.

However the data processing equipment which can check in at a certain music data is restricted to the data processing equipment which checked out the music data. When writing is performed to the external storage which checked out the music data in which edit was forbidden the data processing equipment 1 does not check in at the music data.

[0048] The data processing equipment 1 can bundle up music data a decode key and a process right and can also perform processing (it is hereafter called movement) moved to other data processing equipments. If moving processing is performed no process right will remain in the original data processing equipment.

[0049] It adds to audio contents and contents such as video an image a text or a program are contained in the music data which the data processing equipment 1 treats.

Drawing 3 is a figure showing the format of three kinds of music data which the data processing equipment 1 treats. The distribution format shown in drawing 3 (a) is used when distributing music data. The internal format shown in drawing 3 (b) is used when accumulating music data inside the data processing equipment 1. The duplicate formats shown in drawing 3 (c) are used when you check out music data to the external storage 7.

[0050] Music data is distributed to the data processing equipment 1 in the unit called a package. A package is constituted from the header 40 the navigation information 41 two or more contents 42 and four kinds of data of the accounting information 43 by the distribution format shown in drawing 3 (a). The header 40 includes

information including the position of the package identifier for identifying a package and other data size etc. The contents 42 are contents data of an audio video or an image or a text or a program. Each contents have a peculiar content identifier within a package and are enciphered if needed.

[0051] The navigation information 41 is reproduction control information used when controlling reproduction of music data. A content identifier is used in order to refer to each contents 42 from the navigation information 41. The contents contained in the same package are referred to only using a content identifier and the contents contained in other packages are referred to using a package identifier and a content identifier. The accounting information 43 contains the utilization condition about each contents 42, a price, a decode key etc.

[0052] Music data is treated inside the data processing equipment 1 in the form which removed the accounting information 43. At the internal format shown in drawing 3 (b), music data comprises the header 40, the navigation information 41 and two or more contents 42.

[0053] Before music data is checked out by the external storage 7, it is changed into the format according to the kind of external storage 7. For example, music data is changed into the format which contains the audio contents for SD memory cards and does not contain video content when the external storage 7 is SD (Secure Digital) memory card. Music data consists of the header 44, the contents 42 and the decode key 45 in the duplicate formats shown in drawing 3 (c). The header 44 is the header information according to the kind of external storage 7. The decode key 45 is a decode key taken out from the accounting information 43 of the distribution format. The contents 42 are the contents data chosen from the music data of an internal format according to the kind of external storage 7. Although the music data shown in drawing 3 (c) contains only the one contents 42, it may also contain two or more contents. When you check out music data, the music data of duplicate formats may be divided into two or more files and may be copied.

[0054] In addition to contents data distributed from the distributing server 5, contents data read from CD etc. may be contained in music data. Such data is called contents by which ripping was carried out.

[0055] Hereafter, with reference to drawing 1, composition of the data processing equipment 1 is explained again. The outline of operation of the data processing equipment 1 is as follows. Distributed music data is changed into an internal format by the data conversion part 14 and is accumulated in the in-house data accumulating part 15. A process right about each contents contained in music data is recorded on the copyright management table 16. The control section 17 judges propriety of execution about the inputted processing instruction 30 with reference to the copyright management table 16 and directs processing start, such as reproduction and check-out.

[0056] A user inputs the processing instruction 30 to contents using the input part 10.

Processing instructions explained by this embodiment are distribution, purchase, reproduction, check-out, mode setting. In addition, processing instructions such as data reduction, data editing, data retrieval, import, export, a user datum addition, incorporation of contents by which ripping was carried out, and an inspection of a malfeasance occur. The input part 10 outputs the position information 34 acquired from pointing devices such as a mouse. [0057] The distributes data accumulating part 11 accumulates the music data of a distribution format distributed from the distributing server 5. As shown in drawing 4 about each contents contained in the music data accumulated in the distributes data accumulating part 11, the purchase management table 12 makes a group the package identifier 50, the content identifier 51, and the purchase state 52 and is stored. The purchase states 52 are the conditions specified when purchasing contents; for example, there are states such as reproduction, acquisition, and an audition. About the contents whose purchase state is reproduction, only the specified number of times can reproduce only the specified period. About the contents which are acquisition, a purchase state can be reproduced freely and can check out only the specified number of times. About the contents which are auditions, a purchase state can reproduce only the specified time any number of times.

[0058] When the processing instruction 30 which directs purchase is received from the input part 10, the purchase processing part 13 transmits the information on the purport that it agrees for paying the fee collection server 6 and purchases the process right about the distributed music data. Then, the purchase processing part 13 records the purchased process right on the purchase management table 12. When the specified contents are not accumulated in the distributes data accumulating part 11, the purchase processing part 13 requires distribution of the music data containing the contents from the distributing server 5. After receiving distribution of music data, the purchase processing part 13 outputs the control signal 31 which directs data conversion to the data conversion part 14.

[0059] The data conversion part 14 changes the specified music data into an internal format when the control signal 31 is received. That is, the data conversion part 14 separates the accounting information 43 from the distributed package and asks for the music data of an internal format. The data conversion part 14 extracts the decode key about each contents from the accounting information 43 and records it on the copyright management table 16.

[0060] The in-house data accumulating part 15 accumulates the music data of the internal format outputted from the data conversion part 14. Processing of reproduction, check-out, etc. is performed to the accumulated music data.

[0061] The copyright management table 16 stores the copyright management information about each contents accumulated in the in-house data accumulating part 15 as shown in drawing 5. The copyright management table 16 includes the package identifier 50, the content identifier 51, the purchase state 52, the acquisition-of-right day

53the 54 reproduction frequency decode key 55the number of times 56 of check-out
outand the check-out place information 57. Drawing 5 divides one table into twoand
shows itand the reproduction frequency 55 is arranged after the decode key 54 on
the table before division.

[0062]The package identifier 50the content identifier 51and the purchase state 52 are
the same data as data stored in the purchase management table 12. The acquisition-
of-right day 53 is a date which purchased these contents. The decode key 54 is a
decode key for decoding a code of contents. The reproduction frequency 55 is the
number of times by which contents were reproduced. The number of times 56 of
check-out is the number of times which checked out contents. The check-out place
information 57 contains storage medium identifiers about external storage of a check-
out placeand a label name. A label name is assigned when you check out music data
first to external storage.

[0063]When new music data is accumulated in the in-house-data accumulating part
15the package identifier 50the content identifier 51the purchase state 52the
acquisition-of-right day 53and the decode key 54 are set as a predetermined
valuesrespectively. The reproduction frequency 55 and the number of times 56 of
check-out are initialized by 0 timesand the check-out place information 57 is cleared.
The copyright management table 16 is enciphered with an encryption method peculiar
to the data processing equipment 1 in order to prevent an alteration of data.

[0064]With reference to the copyright management table 16the control section 17
judges propriety of execution about the processing instruction 30and directs
processing startssuch as reproduction and check-out. Operation of the control
section 17 is explained using a flow chart shown in drawing 6. The control section 17
reads copyright management information about the contents from the copyright
management table 16when the processing instruction 30 to contents is received (Step
S101) (Step S102). Nextthe control section 17 judges whether the processing
instruction 30 is executed using read copyright management information (Step S103).
For example, [whether when regeneration is directedwith reference to the number of
times of reproduction permission or reproduction allowable periods contained in the
purchase state 52the reproduction frequency 55 of the control section 17 is below
the number of times of reproduction permissionand] Or when the date counts from
the acquisition-of-right day 53 and is within reproduction allowable periodsit is judged
that a reproduction instruction is executed.

[0065]When it is judged that the control section 17 executes a processing
instructionthe reproduction frequency 55the number of times 56 of check-outetc.
which are contained on the copyright management table 16 are updated (Step S104).
Nextthe control section 17 outputs the control signal 32 which directs a processing
start to a predetermined processing execution part (Step S105). At this timethe
control section 17 includes the decode key 54 read from the copyright management
table 16 in the control signal 32and outputs it. On the other handwhen it is judged

that the control section 17 does not execute a processing instructionthe control signal 32 which directs an alarm display is outputted to the display 21 (Step S106).

[0066]When the control signal 32 which directs a reproduction start is receivedthe regenerating section 18 reads the contents specified from the music data accumulated in the in-house-data accumulating part 15and reproduces these contents using the received decode key 54.

[0067]Check-out/check-in treating part 19When the control signal 32 which directs a check-out start is receivedthe contents specified from the music data accumulated in the in-house-data accumulating part 15 are readit changes into duplicate formatsand the music data after conversion is written in the external storage 7. Check-out/check-in treating part 19 eliminates the music data copied to the external storage 7when the control signal 32 which directs check-in is received.

[0068]Check-out/check-in treating part 19 reads the storage medium identifiers 33 from the external storage 7and outputs them to the control section 17. The control section 17 records the received storage medium identifiers 33 on the copyright management table 16after performing check-out processing. The control section 17 judges propriety of check-in processing by whether the received storage medium identifiers 33 are recorded on the copyright management table 16before performing check-in processing.

[0069]The mode storing section 20 memorizes two kinds of mode information,i.e.a processing mode and a display modein order to change a display screen by the display 21. Such mode information is set up by the processing instruction 30 which shows mode setting. Or such mode information may be automatically set up according to an inputted processing instruction. The display 21 creates a screen which expresses a process right based on copyright information stored in the copyright management table 16 according to such mode informationand displays it on CRTa liquid crystal displayetc.

[0070]Drawing 7 is a figure showing an example of a display screen by the display 21. A title name about the five contents 61-65 and a process right are displayed on the display screen 60 shown in drawing 7. A title name is displayed using a character string and a process right is displayed using an icon. A right of check-out of each contents is displayed using an icon describing a house. An intact right of check-out is displayed using the icon 68 without hatching. A right of check-out in use is displayed using the icon 69 with hatching (namelywhen you check out before using this right of check-out). The icon 70 with a BATSU seal uses that there is no right of check-outand it is displayed. A reproduction right of each contents is displayed using the icon 71 describing a speaker.

[0071]According to the display screen 60 shown in drawing 7that the next processing can be performed to each contents can understand easily. A title name can check out only once the contents 61 which are AAAAA. Although it is renewablehe cannot check out the contents 62 whose title name is BBBBB. Since each of two rights of

check-out is in use he cannot check out the contents 63 whose title name is CCCCC. Since one of two rights of check-out is using the contents 64 whose title name is DDDDD he can check them out only once. A title name can check out only once the contents 65 which are EEEEE with reproduction.

[0072] The icon 66 which carried out form of CD shows that the contents are the contents by which ripping was carried out from CD. The icon 66 shown in drawing 7 shows that the contents 65 are the contents by which ripping was carried out. The comment display 67 expresses the storage medium identifiers about external storage and the label name which checked out contents. The comment display 67 shown in drawing 7 shows what the contents 65 were checked out for by the external storage 7 which has storage medium identifiers which become SD54862. The comment display 67 is displayed when a pointing device moves onto the icon which shows the right of check-out in use.

[0073] Drawing 8 is a table showing correspondence relation between a processing mode set as the mode storing section 20 and contents displayed in each processing mode. A processing mode takes a value of reproduction check-out or movement either as shown in drawing 8. When a processing mode is reproduction contents which fulfill a reproduction condition and which have been reproduction right acquired and contents with a right of check-out by which ripping was carried out are displayed. When a processing mode is check-out what fulfills check-out conditions among bought contents or contents by which ripping was carried out is displayed. When a processing mode is movement what is not checked out among bought contents or contents by which ripping was carried out is displayed.

[0074] Drawing 9 is a table showing the correspondence relation between the display mode set as the mode storing section 20 and the method of presentation in each display mode. A display mode takes the value of the minimum display a selection improper display an icon display or usually a display either as shown in drawing 9. When a display mode is the minimum display only the title name and reproducing time of contents which can be processed are displayed. When a display mode is a selection improper display the title name and reproducing time of all the contents are displayed. However the contents which cannot perform processing distinguish and are displayed. For example a gray indication of the contents which cannot perform processing is given. When a display mode is an icon display the title name and reproducing time of all the contents are displayed. In addition the process right about all the contents is displayed using an icon. When a display mode is usually a display the copyright management information about all the contents is displayed by table format.

[0075] According to the processing mode and display mode which were set as the mode storing section 20 the display 21 changes and displays a screen as shown in the table shown in drawing 10. The display screen 60 shown in drawing 7 is a thing in case a display mode is an icon display. The table shown in drawing 10 shows an example of screen switching and the screen switching method is not restricted to this.

[0076]Operation of the display 21 is explained with reference to the flow chart shown in drawing 11. The display 21 initializes a display screen first (Step S201)and then reads a processing mode and a display mode from the mode storing section 20 (Step S202). Nextthe display 21 searches for the conditions for displaying contents with reference to the table shown in drawing 10 using two kinds of read operational modes (Step S203). Nextthe display 21 judges whether the conditions searched for at Step S203 are fulfilled about each contents in the copyright management table 16 (Step S205)and repeats the processing (Step S206) which adds the copyright management information about the contents which fulfill conditions to a display screen. In Step S206the icon which shows the character string which shows a titleand a process right is added to a display screen according to a display mode. Processing of S207 is performed about all the contents from Step S204.

[0077]Nextthe display 21 receives the position information 34 from the input part 10 (Step S208). The position information 34 is a position on the screen inputted using pointing devicesuch as a mouse. It is judged whether there is the display 21 within limits which displayed the icon about the right of check-out which the position information 34 is using (Step S209). When the position information 34 is in the display rectangle of an iconthe display 21 reads the check-out place information 57 from the copyright management table 16 (Step S210)and adds the comment display 67 to a display screen (Step S211). When there is no position information 34 into the display rectangle of an iconthe display 21 does not add the comment display 67 to a display screen. Then the display 21 displays a screen (Step S212). Therebythe display screen 60 shown in drawing 7 is displayed.

[0078]As shown above, the data processing equipment concerning this embodiment displays the process right about each contents on a screen while processing the contents distributed within the limits of the acquired process right. For this reasonthe user can recognize easily what kind of processing can be performed to each contents. The user can set up mode information and can change the method of presentation of a process right. It is avoidable to input the processing instruction mistaken to the contents which display on a screen only the contents which can be processed and cannot process them by this. The user can recognize easily restriction of the execution frequency added to the process right by choosing the mode which displays an icon for every process right. Since the information about the external storage of the point which checked out contents is displayedthe user can recognize easily to which external storage he checked out music data.

[0079]In this embodimentalthough an icon shall be displayed for every process rightit may replace with this and the number of a process right may be displayed numerically. According to this methodeven when there are many process rightsa field required for a display can be made small. Although a character string is displayed as a label nameit is good also as displaying image data. If a label which printed such a character string or image data is stuck on external storageit will become easy for a user to identify

external storage.

[0080](A 2nd embodiment) Drawing 12 is a block diagram showing composition of data processing equipment concerning a 2nd embodiment of this invention. The data processing equipment 2 shown in drawing 12It has the input part 22the distributes data accumulating part 11the purchase management table 12the purchase processing part 13the data conversion part 14the in-house-data accumulating part 15the copyright management table 16the control section 17the regenerating section 18check-out/check-in treating part 19the mode storing section 20and the display 23. The data processing equipment 2 displays a warning screenwhen it is used in the same music distribution system as the data processing equipment 1 concerning a 1st embodiment and processing is not permitted. About the component same among components of this embodiment as a 1st embodimentthe same reference mark is attached and explanation is omitted.

[0081]The data processing equipment 2 displays a screen which shows it to drawing 14 when you check in at a screen shown in drawing 13 when you check outrespectively. Drawing 13 (a) and drawing 13 (b) are the figures showing a display screen under check-out processing and after check-out processingrespectively. Drawing 14 (a) and drawing 14 (b) are the figures showing a display screen under check-in processing and after check-in processingrespectively. The arrow A1 shown in drawing 13 (a) and drawing 14 (a) – A4 are the things for explanationand are not displayed on a screen.

[0082]As shown in drawing 13 (a)the sub screen 73 in which the contents in the data processing equipment 2 are shownand the sub screen 74 in which the contents in the external storage 7 are shown are displayed on the display screen 72 under check-out processing. A user selects the icon which shows the right of check-out displayed in the sub screen 73 using a pointing deviceand makes it move into the sub screen 74 like the arrow A1 or A2. The input part 22 interprets this drag-and-drop operation as a check-out command.

[0083]In the example shown in drawing 13since there is a right of check-out about the contents 61 in the data processing equipment 2the contents 61 are checked out. On the other handthere is no right of check-out about the contents 62 in the data processing equipment 2. For this reasonthe warning screen 75 in which it is shown that the check-out command which is not permitted was directed is displayed. The message to which the purchase of the right of check-out is urged is displayed on the warning screen 75. The user can purchase the right of check-out of the contents 62 promptly using the warning screen 75.

[0084]When the right of check-out about the contents 62 is purchasedthe contents 62 are checked out and the screen shown in drawing 13 (b) is displayed after check-out processing. The user can recognize having been checked out in the contents 61 and 62 by the display screen shown in drawing 13 (b).

[0085]On the other handas shown in drawing 14 (a)the sub screen 77 in which the

contents in the data processing equipment 2 are shown and the sub screen 78 in which the contents in the external storage 7 are shown are displayed on the display screen 76 under check-in processing. A user chooses the contents displayed in the sub screen 78 using a pointing device and makes it move into the sub screen 77 like arrow A3 or A4. The input part 22 interprets this drag-and-drop operation as the check-in command to contents.

[0086] In the example shown in drawing 14 there is one right of check-out in use [about the contents 61] in the data processing equipment 2. That is the contents 61 checked out by the external storage 7 are checked out from the data processing equipment 2. For this reason the contents 61 check in and the right of check-out about the contents 61 recovers them.

[0087] On the other hand there is no right of check-out in use in the data processing equipment 2 about the contents 62. That is the contents 62 checked out by the external storage 7 were not checked out by the data processing equipment 2. For this reason the warning screen 79 in which it is shown that the check-in command which is not permitted was directed is displayed. After check-in processing the screen shown in drawing 14 (b) is displayed. What the contents 61 checked in and the contents 62 did not check in at them by the display screen which a user shows to drawing 14 (b) can be recognized.

[0088] In the example shown in drawing 14 also when the check-in command to the contents which do not exist in the data processing equipment 2 for example the contents whose title name is PPPPP is inputted the warning screen 79 is displayed.

[0089] In order to display such a screen the input part 22 the control section 17 and the display 23 operate as follows. The input part 22 receives the display position information 35 from the display 23. The display position information 35 is information which shows the display position of the icon which shows a sub screen and a process right. The input part 22 outputs the processing instruction 30 when it judges that movement of the position on the inputted screen or a position corresponds to a processing instruction with reference to the display position information 35.

[0090] The control section 17 operates according to the flow chart shown in drawing 6 and when it judges that check-out/check-in command is not executed it outputs the control signal 32 which directs an alarm display to the display 23 (Step S106). When this control signal 32 is received the display 23 adds the warning screen 75 or 79 to a screen and displays it.

[0091] As shown above the data processing equipment concerning this embodiment displays a warning screen when check-out/check-in command which cannot be processed is directed. For this reason the user can recognize easily that check-out/check-in command was not executed. When you cannot check out the warning screen having contained the message which stimulates the purchase of the right of check-out is displayed. For this reason the user can purchase the right of check-out promptly from this warning screen.

[0092](A 3rd embodiment) Drawing 15 is a block diagram showing the composition of the data processing equipment 3 concerning a 3rd embodiment. The data processing equipment 3 shown in drawing 15the input part 10the distributes data accumulating part 11the purchase management table 12the purchase processing part 13the data conversion part 14the in-house-data accumulating part 15the copyright management table 16the control section 17the regenerating section 18check-out/check-in treating part 19and the referred data editorial department 24 --- andlt has the referred data accumulating part 25. The new data which is used in the same music distribution system as the data processing equipment 1 concerning a 1st embodimentand refers to the distributed music data is used for the data processing equipment 3. About the component same among the components of this embodiment as a 1st embodimentthe same reference mark is attached and explanation is omitted.

[0093]In order to refer to the distributed music datathe new data called referred data is used for the data processing equipment 3. Referred data is used in order to define the music data containing the original music data and new contents. In order to refer to the original music data from referred datathe package identifier of the package (it is hereafter called a reference package) containing the original music data is used.

[0094]Drawing 16 is a figure showing the format of referred data. Drawing 16 (a) is a figure showing the distribution format of music data as well as drawing 3 (a)and drawing 16 (b) is a figure showing the format of referred data. Referred data consists of the header 80the reference package identifier 81two or more reference information 82and two or more contents 83as shown in drawing 16 (b). The header 80 includes the information about the structure of referred datasuch as other positionssizesetc. of data. The reference package identifier 81 is a package identifier of a reference package. The contents 83 are contents data replaced or added to a reference package.

[0095]The reference information 82 is information which shows the substitution of contentsor additional details. The reference information 82 which shows the substitution of contents consists of the substitution flag 84the content identifier 85 before substitutionand the after-substitution content identifier 86. This reference information is contained in a reference packageand the contents 42 which have the content identifier 85 before substitution are included in referred dataand it means replacing by the contents 83 which have the after-substitution content identifier 86. The reference information 82 which shows the addition of contents consists of the additional flag 87 and the additional content identifier 88. This reference information is contained in referred dataand means adding the contents which have the additional content identifier 88 to a reference package.

[0096]The referred data editorial department 24 edits referred data according to the referred data editing instruction 36 inputted from the input part 10. The referred data accumulating part 25 accumulates the referred data edited by the referred data editorial department 24.

[0097]When the reproduction instruction of referred data is received from the control section 17the regenerating section 18 newly creates navigation informationand reproduces music data using this. That isthe regenerating section 18 acquires the reference package identifier 81 from the specified referred data first. Nextthe regenerating section 18 reads the navigation information 41 included in the package which has the reference package identifier 81and develops it on the memory of regenerating section 18 inside. Nextthe regenerating section 18 edits the navigation information developed on the memory using the reference information 82 contained in referred data. For examplewhen the reference information 82 shows the substitution of contentsthe regenerating section 18 replaces the content identifier 85 before all the substitution contained in the navigation information on a memory by the after-substitution content identifier 86. Therebynavigation information is newly created.

[0098]The regenerating section 18 is reproduced according to created navigation information. Since it replaces with the content identifier 85 before substitution and the after-substitution content identifier 86 is contained in created navigation informationit replaces with the contents 42 contained in a reference packageand the contents 83 contained in referred data are reproduced. Music data to which this replaced or added contents data which a user owns to the original music data can be definedand reproduction etc. can be processed to defined data.

[0099]As shown above, data processing equipment concerning this embodiment creates referred data for referring to the original music dataand reproduces music data using this. Contents which a user owns can be freely replaced or added to the original music datawithout changing navigation information included in distributed music data by this. Referred data consists only of contents which reference information and a user ownand does not include copyright management information. For this reasononly reference information can be distributed to other users and other users can also use this.

[0100]Each data processing equipment concerning the 1st to 3rd embodiment is realizable with combination with a program which operates on a computer and a computer. Data processing equipment concerning this invention is realizable by recording this program on recording mediasuch as a floppy (registered trademark) diskand mounting in arbitrary computer systems.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a block diagram showing the composition of the data processing equipment concerning a 1st embodiment of this invention.

[Drawing 2]It is a figure showing the composition of the music distribution system using the data processing equipment concerning a 1st embodiment.

[Drawing 3]It is a figure showing the format of the music data which the data processing equipment concerning a 1st embodiment treats.

[Drawing 4]It is a figure showing an example of the purchase management table in the data processing equipment concerning a 1st embodiment.

[Drawing 5]It is a figure showing an example of the copyright management table in the data processing equipment concerning a 1st embodiment.

[Drawing 6]It is a flow chart which shows operation of the control section in the data processing equipment concerning a 1st embodiment.

[Drawing 7]It is a figure showing an example of the display screen by the data processing equipment concerning a 1st embodiment.

[Drawing 8]It is a table showing a correspondence relation with the contents displayed as the processing mode in the data processing equipment concerning a 1st embodiment.

[Drawing 9]It is a table showing the correspondence relation of the display mode and the method of presentation in the data processing equipment concerning a 1st embodiment.

[Drawing 10]It is a table showing the correspondence relation of two kinds of modes and the method of presentation in the data processing equipment concerning a 1st embodiment.

[Drawing 11]It is a flow chart which shows operation of the display in the data processing equipment concerning a 1st embodiment.

[Drawing 12]It is a block diagram showing the composition of the data processing equipment concerning a 2nd embodiment of this invention.

[Drawing 13]It is a figure showing an example of the display screen at the time of the check-out processing by the data processing equipment concerning a 2nd embodiment.

[Drawing 14]It is a figure showing an example of the display screen at the time of the check-in processing by the data processing equipment concerning a 2nd embodiment.

[Drawing 15]It is a block diagram showing the composition of the data processing equipment concerning a 3rd embodiment of this invention.

[Drawing 16]It is a figure showing the format of the referred data which the data processing equipment concerning a 3rd embodiment treats.

[Drawing 17]It is a block diagram showing the composition of conventional data processing equipment.

[Drawing 18]It is a block diagram showing the composition of conventional copyright protection equipment.

[Explanations of letters or numerals]

123 --- Data processing equipment

4 --- Communication network

5 --- Distributing server

6 --- Fee collection server

7 -- External storage
8 -- Portable music reproduction machine
1022 -- Input part
11 -- Distributes data accumulating part
12 -- Purchase management table
13 -- Purchase processing part
14 -- Data conversion part
15 -- In-house-data accumulating part
16 -- Copyright management table
17 -- Control section
18 -- Regenerating section
19 -- Check-out/check-in treating part
20 -- A mode storing section
2123 -- A display
24 -- The referred data editorial department
25 -- A referred data accumulating part
30 -- A processing instruction
3132 -- A control signal
33 -- Storage medium identifiers
34 -- Position information
35 -- Display position information
36 -- A referred data editing instruction
607276 -- A display screen
61-65 -- Contents
6668-71 -- An icon
67 -- A comment display
73747778 -- A sub screen
7579 -- A warning screen
